

### REMARKS

Claims 1-6, 8-39, 43-64, and 84-89 are pending.

With this amendment, claim 1 is amended to remove the typographic error therein.

#### Rejection of claims 1, 56, and 85

Independent claims 1, 56, and 85 were rejected under 103(a) over a combination of Ashurst and Chinn (6,830,950) or Hankins (7,045,170). These rejections are traversed.

Claims 1, 56, and 85 each expressly recites, among other features, a step of introducing a first component of the cleaning agent into the chamber such that the pressure inside the chamber is at a first pressure value; and another step of introducing a second component of the cleaning agent into the chamber such that the pressure inside the chamber is at a second pressure value that is higher than the first pressure value. It is respectfully submitted that the undersigned can not find any descriptions or suggestions in any of the cited references including Ashurst, Chinn, Hankins, and Malone (6,951,769) in the Office Action.

In the section of Response to Amendment of the Office Action, the Examiner discussed the above two cleaning agent introduction steps that “*Applicant argued that ... two cleaning steps with separate pressures with UV and the prior art teaches a two cleaning steps performed at the same pressure. The Examiner agrees in part. It has been well settled that the transposition of process steps or the splitting of one step into two, wherein the processes are substantially identical or equivalent in terms of function, manner and result, was held to be not patentably distinguish the process. Ex parte Rubin, 128 USPQ 440 (Bd. Pat. App 1959).*” It is respectfully submitted that the undersigned can not find any teachings or suggestion of a two step cleaning at different pressures in any of the cited references of Ashurst, Chinn, Hankins, and Malone. Moreover, it is respectfully submitted that *Ex parte Rubin, 128 USPQ 440 (Bd. Pat. App 1959)* is not applicable to the instant steps a) and b) of each of claims 1, 56 and 85; and steps a) and b) set forth in each of claims 1, 56, and 85 do not fall into the teachings of *Ex parte Rubin, 128 USPQ 440 (Bd. Pat. App 1959)* either. *Ex parte Rubin* is on substantially identical or equivalent processes. However, steps a) and b) as set forth in each of claims 1, 56, and 85 are not “substantially identical or equivalent” as defined in *Ex parte Rubin*. It is also submitted, that

*Ex parte Rubin* does not establish a separate standard of patentability – even if equivalent (which is not the case here) the prior art steps would still need to be proof of the obviousness of the claimed invention (also not the case here).

As described in MPEP section 2144.04 C (changes in sequence of adding ingredients,” wherein decision of *Ex parte Rubin* was cited, *Ex parte Rubin*, 128 USPQ 440 (Bd. Pat. App 1959) is a “prior art reference disclosing a process of making a laminated sheet wherein a base sheet is first coated with a metallic film and thereafter impregnated with a thermosetting material was held to render *prima facie* obvious claims directed to a process of making a laminated sheet by reversing the order of the prior art process steps.” (emphasis added) It is respectfully submitted that: 1) steps a) and b) set forth in each of claims 1, 56, and 85 are not substantially identical or equivalent to one or a plurality of steps in the cited references, and 2) the combination of steps a) and b) in the claims is not a reversal of the same steps in the cited references.

In contrast, as discusses in the specification of this patent application (e.g. [0022]), “*As an aspect of the invention, a pressure cycle is provided to expedite the cleaning process. The cleaning cycle comprises three steps: a) filling a first component of the cleaning agent into the chamber to a first pressure, b) filling the chamber with a second component of the cleaning agent to a second pressure that is higher than the first pressure and c) reducing the pressure inside the chamber to a third pressure that is lower than the first pressure.*” As one example given in the specification of the present application (but not limited thereto), devices with hard to reach areas to be cleaned (e.g. where the ozone must enter into micro areas or through micro openings), can be cleaned in an improved fashion by the steps in the claimed processes. It can be seen from the above description, steps a) and b) are part of a cleaning cycle; and this cleaning cycle is particular useful in expediting the cleaning process.

Even though Hankins recites that “*A variety of methods can be used to clean the surface, depending on the residual or surface termination left by the fabrication of the MEMS device 310. These cleaning methods include heating the MEMS device 310 at ambient pressure to a temperature greater than 100 degrees in an inert environment, heating the MEMS device 310 at sub-ambient pressure and less*

*than 100 degree. in an inert environment, placing the MEMS device 310 in a dry environment for a period of time, cleaning surface residuals with a vapor-phase ozone system, and cleaning the surface with an oxidizing plasma,”*(line 51, column 8), it is respectfully submitted that a) heating the MEMS device 310 at ambient pressure to a temperature greater than 100 degrees in an inert environment; b) heating the MEMS device 310 at sub-ambient pressure and less than 100 degrees in an inert environment, c) placing the MEMS device 310 in a dry environment for a period of time; d) cleaning surface residuals with a vapor-phase ozone system, and e) cleaning the surface with an oxidizing plasma - are separate cleaning methods possible for cleaning, but not consecutive steps of a single cleaning process. Moreover, these cleaning methods employ different cleaning agents as compared to that as set forth in claims 1, 56, and 85. Hankins, nor any of the cited references, alone or in combination, teach or suggest a cleaning cycle comprising steps a) and b) as set forth in claims 1, 56, and 85, nor do they disclose equivalent steps (e.g. but in reverse order) as implied in the Office Action.

Because Ashurst, Chinn, Hankins, and Malone, either individually or in any combination thereof fail in teaching or suggesting all features of each of claims 1, 56, and 85, claims 1, 56, and 85 are patentable over Ashurst, Chinn, Hankins, and Malone. Reconsideration and withdrawal of the rejection are respectfully requested.

#### Rejection of claim 31

Independent claim 31 was rejected by the Examiner under 103(a) over Ashurst in combination with Chinn or Hankins further in combination of Malone (6,951,769). This rejection is respectfully traversed for at least the following reasons.

Claim 31 expressly recites, among other features, a step of introducing the gaseous modification agent into the chamber such that the gaseous modification agent is delivered through a micro-opening of the assembly to the surface of the microelectromechanical device for modifying the surfaces of the microelectromechanical device, wherein the micro-opening is between a first substrate and a second substrate that is glass having a reflective and deflectable mirror plate formed thereon; wherein the micro-opening has a characteristic dimension around 10 micrometers or less. This feature is nowhere disclosed or suggested by Ashurst, Chinn, Hankins, or Malone. As indicated by the Examiner in the Office Action, Ashurst fails to teach the MEMS device being part of an assembly (e.g. a partially packaged device) and then into the

chamber for cleaning. Though Malone described an opening (abstract and item 240 in FIG. 2C), Malone does not disclose or suggest the micro-opening has a characteristic dimension of 10 microns or less. Moreover, the micro-opening of Malone is between the package lid (225) and package substrate 205 in FIG. 2c), which is distinct from the micro-opening set forth in claim 31 between a first substrate and a second substrate having the reflective and deflectable mirror plate. Because Ashurst and Malone, either individually or in combination, fail in teaching or suggesting all features of claim 31, claim 31, as well as claims 32-44 that depend from claim 31, is patentable over Ashurst, Chinn, Hankins, or Malone. Reconsideration and withdrawal of the rejection are respectfully requested.

#### Rejection of claim 45

Independent claim 45 was rejected by the Examiner under 103(a) over Ashurst in combination with Chinn or Hankins further in combination of Malone (6,951,769). This rejection is respectfully traversed for at least the following reasons.

Claim 45 expressly recites, among other features, that the assembly comprises a micro-opening between the two substrates, a step of placing the assembly on a supporting surface of a package substrate; and a step of introducing the gaseous modification agent into the chamber for modifying the surface of the microelectromechanical device by delivering the gaseous modification agent through the micro-opening of the assembly. These features are nowhere disclosed or suggested by Ashurst, Chinn, Hankins, or Malone. As indicated by the Examiner in the Office Action, Ashurst fails to teach the MEMS device being part of an assembly (e.g. a partially packaged device) and then into the chamber for cleaning. Though Malone described an opening (abstract and item 240 in FIG. 2C), Malone does not disclose or suggest the micro-opening has a characteristic dimension of 10 microns or less. Moreover, the micro-opening of Malone is between the package lid (225) and package substrate 205 in FIG. 2c), which is distinct from the micro-opening set forth in claim 45. Because Ashurst, Chinn, Hankins, and Malone, either individually or in any combinations thereof, fail in teaching or suggesting all features of claim 45, claim 45 is patentable over Ashurst, Chinn, Hankins, or Malone. Reconsideration and withdrawal of the rejection are respectfully requested.

It is believed that this application is in condition for allowance. Favorable consideration and prompt allowance are respectfully requested. In the event any fees are required in connection with this paper, please charge the Deposit Account No. 20-0668.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Gregory R. Muir". The signature is fluid and cursive, with the first name "Gregory" being more prominent and the last name "Muir" following in a similar style.

MUIR IP LAW GROUP  
560 S Winchester Blvd., Suite 500  
San Jose, CA 95128  
Fax: (408) 521-2060

Gregory R. Muir  
Attorney for Applicants,  
Registration No. 35,293  
Tel: (408) 918-3085